



DEPARTMENT OF DEFENSE EXPLOSIVES SAFETY BOARD
2461 EISENHOWER AVENUE
ALEXANDRIA VIRGINIA A 22331-0600



13 DEC 2002

DDESB-IK

MEMORANDUM FOR ALTERNATE ARMY BOARD MEMBER, MR. JAMES C. KING
NAVY BOARD MEMBER, CAPT MARK HELMKAMP
AIR FORCE BOARD MEMBER, COLONEL DANIEL TOMPKINS
MARINE CORPS BOARD MEMBER, MR. JERRY MAZZA

SUBJECT: 325th Meeting of the Department of Defense Explosives Safety Board

The Department of Defense Explosives Safety Board (DDESB) held its 325th meeting on 11 December 2002 and took the following actions:

- a. The Board approved the "re-write" of DoD 6055.9-STD for publication as modified during the meeting based on comments provided by the Army, Navy, Air Force, Defense Threat Reduction Agency, and the DDESB Secretariat. The modifications to the "re-write" are attached. The "re-write" will be posted on the DDESB webpage <http://www.ddesb.pentagon.mil/ddesb/> in draft format until it is published.
- b. The Board approved the revision of Note 4 to Table C9.T8 (attached) concerning storage of Hazard Division (HD) 1.2.1 in the open and the Navy proposed modification to the description of AGS (L) found in the Legend of Table C9.T8. In addition, the Board approved incorporating the just approved revision into the DoD 6055.9-STD "re-write" submitted for Board approval.
- c. The Board tabled the proposed changes to inert storage criteria, and directed the Secretariat to obtain Board approval for those proposed changes through a "Vote by Correspondence." This is being done in order to provide Services additional time to review the proposed changes.
- d. The Board directed the Secretariat to coordinate proposed Marine Corps deformer language, presented at the 325th Board Meeting, with the Services and then to obtain Board approval for those proposed changes through a "Vote by Correspondence."
- e. The Board directed the Secretariat to coordinate Service approval of the "6-Year Plan for Development and Implementation of Risk-Based Methods for DoD Explosives Safety," prepared by the Risk-Based Explosives Safety Criteria Team, through formal coordination.



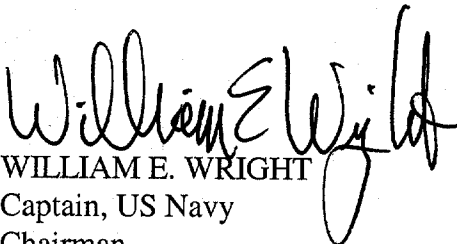
f. The Board agreed to vote by correspondence on the proposals prepared by the Intentional Detonation Working Group. The request for vote by correspondence will be sent out by the Chairman under separate cover.

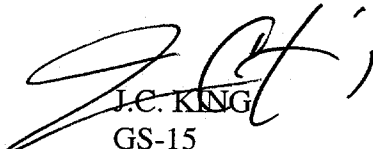
g. The Board directed the Secretariat to coordinate the Army proposed language addressing hazards of electromagnetic radiation to ordnance (HERO), presented at the 325th Board meeting, with the Services for a vote at a future Board meeting.

h. The Board agreed that the DDESB should continue to maintain advocacy for and coordinate efforts to re-issue DoD 4145.26-M "DoD Contractors' Safety Manual for Ammunition and Explosives."


The Board scheduled the next formal meeting (326th) for 11 June 2003.


At a subsequent meeting, held on 13 December 2002, the Board determined, based on recent events involving range residues and similar material that potentially pose explosives hazards to the public, that DoD 6055.9-STD shall address such material. Accordingly, the Board will develop language to address explosives safety standards for such material for vote at its next scheduled meeting.

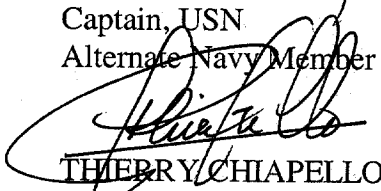

WILLIAM E. WRIGHT
Captain, US Navy
Chairman


J.C. KING
GS-15

Alternate Army Member


DANIEL T. TOMPKINS
Colonel, USAF
Air Force Member


ROBERT HONEY
Captain, USN
Alternate Navy Member


THIERRY CHIAPELLO
GS-45
Alternate Marine Corps
Member

Attachments
As stated

cc:
Alternate Air Force Board Member, Mr. Eric Olson
JCS (J-4-SMPED)
DTRA (Cdr. Gatski)

DCMA (DCMA-O)
TRANSCOM (TCJ4-LT)
DA, Director of Safety (Mr. J. Gibson)
Director, USADAC, (Mr. C. Stroo)
NOSSA/N711 (Mr. Richard T. Adams)

APPROVED HD 1.2.1 CRITERIA FOR OPEN STORAGE

Revised Note 4 to Table C9.T8 (changes in italics).

4. For HD 1.2.1 items *in any structure, truck, trailer, or railcar*, use the larger of the two applicable values given in Tables C9.T6A and C9.T6B; *for HD 1.2.1 items in the open use Table C9.T6A*; for HD 1.2.2 items use Table C9.T7.

Revised Definition for AGS (L) under LEGEND in Table C9.T8. (Changes in italics)

AGS (L) - Aboveground Site, Light; Light Structure, open stack, truck, trailer, or railcar.
(open stacks - see Note 4)

APPROVED MODIFICATIONS TO DOD 6055.9-STD "RE-WRITE"

Approved NAVY Comments:

CHAPTER 1

1. Delete C1.2.3.2.3.
2. Revise C1.3.2 as follows:

C1.3.2. Apply to DoD personnel and property when hazarded by known host nation or off-installation AE hazards.

3. Change "C1.4.1.3" to "C1.4.4".

CHAPTER 2

C2.3.1.1, third line: Change "an" to "a".

CHAPTER 3

Table C3.T1, Note 10. Revise second sentence, as follows, to update referenced paragraphs:

When mixing CG N AE with CG B through CG G or with CG S, see C9.2.2.1.1, C9.2.2.4, C9.2.2.10, and C9.2.2.11 to determine the HD for the mixture.

CHAPTER 5

1. C5.2.1.1, fifth line: Change "Reference" to "reference".
2. C5.2.1.3.1, second line: Add "(4.54 kg)" after 10 lbs.
3. Delete examples from C5.4.1.1.2.
4. Change "ES" in C5.4.1.1.2 to "facilities".

CHAPTER 6

C6.4, last sentence: Change "interconnected" to "bonded".

CHAPTER 7

C7.2.1: Add the following sentence at the beginning of the paragraph:

"Design and installation of a LPS used to protect DoD AE must meet, at a minimum, the requirements NFPA 780, "Lightning Protection Code," (reference m)."

CHAPTER 9

1. C9.4.1.1.2.1.5, end of fourth line: change "vehicle" to "vehicles".
2. C9.4.1.1.2.1.8: Change the second sentence to read:

"The use of intervening barricades is required to eliminate propagation by primary fragment impact, thereby eliminating the need to total NEWQD."

3. C9.4.1.2.1.1.1.6, fourth line: Change "C9.T11" to "C9.T8".
4. C9.4.2.1.2:
 - a. Eighth line: Change "C9.4.1.2.1.1" to "C9.4.1.2.1.1.1".
 - b. Last line: Change "C9.T11" to "C9.T8".
5. Table C9.T8, Note 6, last line: Change "use" to "used".

Approved USAF Comments:

1. Replace C2.2.5.4.2 with:

"Delayed propagation of an explosion may occur at the ES, as either a direct result of a fire or as a result of equipment failure."

2. Revise the second sentence of C2.2.5.7.4 to:

"If determined to be necessary, reducing the use of glass or the size of any glass surfaces and the use of blast resistant glass will provide some relief."

3. C2.3.4: Delete Note at end of paragraph.

4. Revise C2.5.2 to the following:

C2.5.2. Fragmentation. *A HD 1.4 event will not produce fragments of appreciable energy (i.e., greater than 14.8 ft-lbs (20 J)). (Note: Fragments from HD 1.4S have energies less than or equal to 5.9 ft-lbs (8 J)).*

5. C2.5.3: Delete parenthetical note at end of paragraph.

6. Revise C4.2 as follows:

C4.2. Risk Assessment. The responsible DoD Component will perform a risk assessment on new or modified operations and facilities involving AE. Based upon such an assessment, engineering design criteria for facilities and operations will be developed for use in the selection of equipment, shielding, engineering controls, and protective clothing for personnel.

C4.2.1. The risk assessment will include:

C4.2.1.1. Initiation sensitivity.

C4.2.1.2. Quantity of materials.

C4.2.1.3. Heat output.

C4.2.1.4. Rate of burn.

C4.2.1.5. Potential ignition and initiation sources.

C4.2.1.6. Protection capabilities of shields, various types of clothing, and fire protection systems.

C4.2.1.7. Personnel exposure.

C4.2.2. New or modified facilities, located within the IBD arc of any PES, that will include glass panels and will contain personnel will have a glass breakage personnel hazards risk assessment conducted.

7. C4.4.7.1: Revise the first sentence of C4.4.7.1 as follows:

"When use of window panels is determined to be necessary and a risk assessment...."

8. C5.1.2: Deleting C5.1.2 and renumbering the following paragraphs accordingly.

9. C5.1.3: Delete C5.1.3 and renumbering the following paragraphs accordingly.

10. C5.3.3.2: Delete the note provided at the end of C5.3.3.2.

11. Table C9.T14: Delete Note 5 callouts in the table (two places).

12. C9.8.18.6: Delete callout for K11.

13. Appendix 1 Glossary - **AP1.122. Net Explosive Weight for QD (NEWQD): Change definition to the following:**

AP1.122. Net Explosive Weight for QD (NEWQD): The total quantity, expressed in pounds [kg], of high explosives equivalency in each item or round to be used when applying QD criteria or other standards. The NEWQD is equal to the NEW unless hazard classification

testing has shown that a lower weight is appropriate for QD purposes. (Note: If the NEWQD is less than the NEW, the reason is usually that propellant or other substances do not contribute as much to the blast effect as the same amount of high explosives would.)

14. C5.2.1.3.1: Add missing metric conversion of "4.54 kg" after 10 lbs.

15. C7.2.2: Highlight metric equivalent in yellow.

16. C9.4.1.1.6.2: Change first sentence to:

"An installation boundary, unless the area outside the boundary naturally prohibits access, is government land that is not open to the public, or access is restricted and controlled by other means."

17. Table C9.T1, Notes 1 and 3: Change metric equivalents to [1/55.7 m²]

18. Table C9.T16, Note 9: Provide metric equivalent for 55 gallons and highlight.

19. C10.4.8.2: Delete the yellow highlighting from "C9.8.14."

20. Appendix 2 - C9.T5-2: Remove italics from equation.

Approved Army Comment:

Chapters 8 and 11: Specify "Service-certified masks" wherever "M9", "M17", or "M40" are currently specified.

Approved DTRA Comments:

1. Revise rewording of C1.2.3.1 and C1.2.3.2 to the following:

C1.2.3.1. In the United States (U.S., which includes US territories, possessions, and commonwealths; and other areas over which the US Government has complete jurisdiction and control or has exclusive authority or defense responsibility.

C1.2.3.2. Outside the U.S.:

2. Revise C10.1.2.1 and C10.1.2.3 to the following:

C10.1.2.1. Those DoD AE activities located outside the U.S.

C10.1.2.3. Contingency, combat, and MOOTW training, regardless of location, when specifically authorized by applicable DoD Component headquarters or Unified Commander. Prior to approval of this training, a risk analysis that thoroughly assesses asset preservation and identifies the risk associated with the training will be conducted. QD separations provided for asset preservation will be used for training, except where C9 permits lesser distances to be used.

3. C1.3.5.2. Change paragraph reference to C1.4.4.

4. C9.4.1.1.2.1.6. Change to:

C9.4.1.1.2.1.6. Maintenance of military vehicles or equipment that are located outside the U.S., when the PES is a basic load or a ready storage area. In such cases:

5. C9.6.1.2.1. Change referenced paragraph to C9.6.1.7.

Approved Secretariat Comments:

1. Figures and Tables: Table C9.T11: Change "HD 1.1.1" to "HD 1.2.2."

2. C5.3.3.1: Provide a metric equivalent of "4,54 kg" for ten pounds and change 155mm to 152mm.

3. C7.2.2: Highlight metric equivalent.

4. C8.T4: Change "1.2 and 1.5", under the HD column to "1.1 and 1.5".

5. C8.T4: Change known quantity for HD 1.1 and HD 1.5 to:

$$15,000 \text{ lbs} < \text{NEWQD} \leq 55,285 \text{ lbs}$$

$$D = 4000 \text{ ft}$$

$$6,804 \text{ kg} < \text{NEWQD} \leq 25,077 \text{ kg}$$

$$D = 1,219 \text{ m}$$

$$\text{NEWQD} > 55,285 \text{ lbs}$$

$$D = 105W^{1/3}$$

$$\text{NEWQD} > 25,077 \text{ kg}$$

$$D = 41.65Q^{1/3}$$

6. C9.2.2.1: Add a new C9.2.2.1.4 as follows:

C9.2.2.1.4. When dissimilar HD 1.6 are mixed and have not been tested to ensure non-propagation, the mixed HD 1.6 AE will be individually considered to be HD 1.2.1 or HD 1.2.2, based on their individual NEWQD or over-riding fragmentation characteristics.

7. Revise Note 10 as follows:

10. When mixing CG NAE with CG B through CG G or with CG S, see C9.2.2.1.1, C9.2.2.4, C9.2.2.10, and C9.2.2.11 to determine the HD for the mixture.

8. Revise Note 1 of C9.T4: "669 ft < d < 794ft" to "669 ft < d < 715 ft".

9. C9.4.1.4.1: Change the callout for C9.T5 to C9.T4.

10. Figure C9.F7: Delete the callout of $d=9W^{1/3}$ out the front of the ECM.

11. Note 5 of C9.T9: Delete "in C9.T8" from end of first sentence.

12. Table C9.T25: Change title to "Table C9.T25, Minimum Hazard Factor for HAS for Propagation Prevention".

13. Table C9.T26: Change title to "Table C9.T26, Minimum Hazard Factor for HAS for Asset Protection".

14. Table C9.T35: Change table heading from "Maximum Fragment Range" to "Maximum Fragment Distance".

15. Table C9.T36: Change entries for 37mm projectile to "980" and "298.7".